At page 12, line 6, please delete the paragraph, and insert the following paragraph therefor:

--Figure 3 represents 5' upstream region of the human cyclin A1 gene (nucleotide positions –1299 through +152 are shown; SEQ ID NO:36).--.

Please delete the paragraph at page 17, line 20 through page 18, line 1, and insert therefor the following paragraph:

--"Virus", as used herein, means any virus, or transfecting fragment thereof, which may facilitate the delivery of the genetic material into male germ cells. Examples of viruses which are suitable for use herein are adenoviruses, adeno-associated viruses, retroviruses such as human immune-deficiency virus, Moloney murine leukemia virus and the retrovirus vector derived from Moloney virus called vesicular-stomatitis-virus-glycoprotein (VSV-G)-Moloney murine leukemia virus, mumps virus, and transfecting fragments of any of these viruses, and other viral DNA segments that facilitate the uptake of the desired DNA segment by, and release into, the cytoplasm of germ cells and mixtures thereof. The mumps virus is particularly suited because of its affinity for immature sperm cells including spermatogonia. All of the above viruses may require modification to render them non-pathogenic or less antigenic. Other known vector systems, however, may also be utilized within the confines of the invention.--.

At page 23, lines 12-24, please delete the paragraph, and insert the following paragraph therefor:

--Therefore, for the purposes of obtaining selectable transgenic stem cells in accordance with the present method, silencing of expression from the cyclin A1 promoter in stem cell types other than germ cells is preferably prevented by flanking the promoter sequence and the reporter gene with insulator elements, for example, by including double copies of the 1.2 kb chicken β-globin insulator element 5' to the cyclin A1 promoter sequence and 3' to the reporter protein gene in the present DNA construct. (M.J. Pikaart *et al.*, *Loss of transcriptional activity of a transgene is accompanied by DNA methylation and histone deacetylation and is prevented by insulators*,

Genes Dev. 12:2852-62 [1998]; Chung *et al.*, *DNA sequence which acts as a chromatin insulator element to protect expressed genes from cis-acting regulatory sequences in mammalian cells*, U.S. Patent No. 5,610,053).--.

Please delete the paragraph at page 45, lines 5-11, and insert the following paragraph therefor:

--Genomic sequences 1299 bp upstream of the transcription start site were cloned and sequenced. No TATA box was found in proximity to the putative transcriptional start site. The main transcriptional start site is likely to function as an initiator region (Inr) since the sequence CCAGTT (SEQ ID NO:33) is very similar to the consensus Inr sequence TCA G/T T T/C (SEQ ID NO:34; T.W. Burke and J.T. Kadonaga, Genes & Development 1:3020-31 [1997]). No DPE element was found downstream of the main transcriptional start site. (See *id.*). Several potential binding sites for transcription factors occur within the sequence.--.

In the Claims:

Please cancel Claims 134, 135, 142, 143, and 145, without prejudice, and amend Claims 133, 136, 137, 141, 144, 146-149, 151, 155-170, 172, 173, 175, 181, 182, 184, and 188-195 as follows.

133.(Amended) A method of obtaining a transgenic stem cell of a non-human mammal, said transgenic stem cell being a transgenic germ cell, comprising:

injecting into a gonad of a male non-human mammal a transfection mixture comprising at least one transfecting agent that comprises a lipid transfecting agent, a liposome, an adenovirus-enhanced-transferrin-polylysine-DNA complex, or a viral vector, the viral vector being selected from the group consisting of retroviral vectors, mumps vectors, and adenoviral vectors, and at least one polynucleotide comprising a transcriptional unit of a human cyclin A1 promoter sequence operatively linked to a DNA encoding a fluorescent or light-emitting protein, wherein said gonad contains a male germ cell of the non-human mammal, and wherein said germ cell is selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene

spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa;

causing said polynucleotide to be taken up by, and released into, said germ cell; and

incorporating said polynucleotide into the genome of said germ cell, whereby a transgenic germ cell is obtained that expresses said fluorescent or light-emitting protein, by the detection of which the transgenic germ cell can be isolated or selected from a population of non-transgenic germ cells.

134.(Canceled)

135.(Canceled)

136.(Amended) The method of Claim 133, wherein said cyclin A1 promoter sequence comprises SEQ ID NO:2, or an operative fragment of SEQ ID NO:2, or an operative derivative of any of these, wherein the derivative does not comprise an operative translational start site at nucleotide positions 1425-1427 of SEQ ID NO:2, and wherein the derivative comprises a Sp1 binding site between nucleotide positions 1188-1262 of SEQ ID NO:2.

137.(Amended) The method of Claim 133, wherein said polynucleotide further comprises at least one insulator element flanking said transcriptional unit.

138.(Reiterated) The method of Claim 137, wherein at least one of said insulator element(s) is a chicken β-globin insulator element.

139.(Reiterated) The method of Claim 133, wherein said fluorescent or light-emitting protein is a green fluorescent protein, yellow fluorescent protein, blue fluorescent protein, phycobiliprotein, luciferase or apoaequorin.

140.(Reiterated) The method of Claim 133, wherein said non-human mammal is a non-human primate, a mouse, a rat, a rabbit, a gerbil, a hamster, a canine, a feline, an ovine, a bovine, a swine, a pachyderm, an equine, or a marine mammal.

141.(Amended) The method of Claim 133, wherein the transgenic germ cell develops into a male gamete after said polynucleotide is incorporated into the genome of said germ cell.

142.(Canceled)

143.(Canceled)

144.(Amended) A transgenic germ cell obtained by the method of Claim 133.

145.(Canceled)

146.(Amended) A transgenic non-human mammal comprising the transgenic germ cell of Claim 144.

147.(Amended) Semen of a non-human mammal comprising the transgenic male gamete obtained by the method of Claim 141.

148.(Amended) A method of producing a transgenic non-human mammalian line having native germ cells comprising a transgene, comprising

breeding of the non-human mammal of Claim 146 with a member of the opposite sex of the same species; and selecting progeny for stem cell-specific expression of a xenogeneic fluorescent or light-emitting protein.

149.(Amended) A method of obtaining a transgenic stem cell of a non-human mammal, comprising:

injecting into a gonad of a male non-human mammal a transfection mixture comprising at least one transfecting agent that comprises a lipid transfecting agent, a liposome, an adenovirus-enhanced-transferrin-polylysine-DNA complex, or a viral vector, the viral vector being selected from the group consisting of retroviral vectors, mumps vectors, and adenoviral vectors, and at least one polynucleotide comprising a transcriptional unit of a cyclin A1 promoter sequence consisting of SEQ ID NO:2, or an operative fragment or derivative thereof, wherein the derivative does not comprise an operative translational start site at nucleotide positions 1425-1427 of SEQ ID NO:2, and wherein the derivative comprises a Sp1 binding site between nucleotide positions 1188-1262 of SEQ ID NO:2, said promoter sequence operatively linked to a DNA encoding a fluorescent or light-emitting protein, wherein said gonad contains a male germ cell of the non-human mammal, and wherein said germ cell is selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene

spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa;

causing said polynucleotide to be taken up by, and released into, said male germ cell;

incorporating said polynucleotide into the genome of said germ cell;

allowing said male germ cell to develop into a transgenic male gamete; and

breeding said male non-human mammal with a female of its species, wherein the transgenic male gamete fertilizes an ovum, to obtain a transgenic progeny that comprises at least one transgenic stem cell, the transgenic stem cell being selected from the group consisting of germ cells and somatic stem cells, and the transgenic stem cell expresses said fluorescent or light-emitting protein, whereby the transgenic stem cell can be isolated or selected from a non-stem cell of the transgenic progeny by detecting light emissions from said fluorescent or light-emitting protein.

150.(Reiterated) The method of Claim 149, wherein breeding is by in vitro or in vivo fertilization of an ovum of said female.

151.(Amended) The method of Claim 149, wherein said polynucleotide further comprises at least one insulator element flanking said transcriptional unit.

152.(Reiterated) The method of Claim 151, wherein at least one of said insulator element(s) is a chicken β-globin insulator element.

153.(Reiterated) The method of Claim 149, wherein said fluorescent or light-emitting protein is a green fluorescent protein, yellow fluorescent protein, blue fluorescent protein, phycobiliprotein, luciferase or apoaequorin.

154.(Reiterated) The method of Claim 149, wherein said non-human mammal is a non-human primate, a mouse, a rat, a rabbit, a gerbil, a hamster, a canine, a feline, an ovine, a bovine, a swine, a pachyderm, an equine, or a marine mammal.

155.(Amended) The method of Claim 149, further comprising growing the transgenic stem cell of said transgenic progeny in vitro.

156.(Amended) The method of Claim 155, wherein the transgenic stem cell is grown in the presence of an inhibitor of DNA methylation.

157.(Amended) A transgenic stem cell obtained by the method of Claim 149.

158.(Amended) The transgenic stem cell of Claim 157, wherein said stem cell is a pluripotent, multipotent, bipotent, or monopotent stem cell.

159.(Amended) The transgenic stem cell of Claim 157, wherein said stem cell is a spermatogonial, embryonic, osteogenic, hematopoietic, granulopoietic, sympathoadrenal, mesenchymal, epidermal, neuronal, neural crest, O-2A progenitor, brain, kidney, pancreatic, liver or cardiac stem cell.

160.(Amended) The transgenic stem cell of Claim 157, wherein said stem cell is a transgenic female or a transgenic male germ cell.

161.(Amended) A transgenic non-human mammal comprising the transgenic stem cell of Claim 157.

162.(Amended) A transgenic male gamete obtained by the method of Claim 149.

163.(Amended) Semen comprising the transgenic male gamete of Claim 162.

164.(Amended) A method of producing a transgenic non-human mammalian line having native germ cells, comprising

breeding the transgenic non-human mammal of Claim 161 with a member of the opposite sex of the same species; and selecting progeny for stem cell-specific expression of a xenogeneic fluorescent or light-emitting protein.

165.(Amended) A transgenic stem cell obtained by:

obtaining a male germ cell from a non-human mammal;

transfecting said male germ cell in vitro with a transfection mixture comprising at least one transfecting agent that comprises a lipid transfecting agent, a liposome, an adenovirus-enhanced-transferrin-polylysine-DNA complex, or a viral vector, the viral vector being selected from the group consisting of retroviral vectors, mumps vectors, and adenoviral vectors, and at

least one polynucleotide comprising a transcriptional unit of a human cyclin A1 promoter sequence operatively linked to a DNA encoding a fluorescent or light-emitting protein, wherein said male germ cell is selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa;

causing said polynucleotide to be taken up by, and released into said male germ cell, wherein said polynucleotide is incorporated into the genome of said germ cell; and

fertilizing an ovum with said transfected male germ cell such that a transgenic progeny expressing said fluorescent or light-emitting protein in at least one of its stem cells is obtained, said at least one of its stem cells being a transgenic stem cell selected from the group consisting of germ cells and somatic stem cells.

166.(Amended) The transgenic stem cell of Claim 165, wherein the transgenic stem cell is a pluripotent, multipotent, bipotent, or monopotent stem cell.

167.(Amended) The transgenic stem cell of Claim 165, wherein said stem cell is a spermatogonial, embryonic, osteogenic, hematopoietic, granulopoietic, sympathoadrenal, mesenchymal, epidermal, neuronal, neural crest, O-2A progenitor, brain, kidney, pancreatic, liver or cardiac stem cell.

168.(Amended) The transgenic stem cell of Claim 165, wherein the transgenic stem cell is a transgenic female germ cell or a transgenic male germ cell.

169.(Amended) A transgenic non-human mammal comprising the transgenic stem cell of Claim 165.

170.(Amended) Semen comprising the transgenic male germ cell of Claim 168.

171.(Reiterated) A method of producing a transgenic non-human mammalian line having native germ cells, comprising

breeding the non-human mammal of Claim 169 with a member of the opposite sex of the same species; and selecting progeny for stem cell-specific expression of a xenogeneic fluorescent or light-emitting protein.

172.(Amended) A transgenic non-human mammalian cell comprising a nucleic acid construct, said nucleic acid construct comprising a human cyclin A1 promoter having nucleotide sequence SEQ ID NO:2, or an operative fragment of SEQ ID NO:2, or an operative derivative of any of these, wherein the derivative does not comprise an operative translational start site at nucleotide positions 1425-1427 of SEQ ID NO:2, and wherein the derivative comprises a Sp1 binding site between nucleotide positions 1188-1262 of SEQ ID NO:2.

173.(Amended) A transgenic non-human mammal comprising the transgenic non-human mammalian cell of Claim 172.

174.(Reiterated) The transgenic non-human mammalian cell of Claim 172, wherein said cell is a transgenic stem cell.

175.(Amended) The transgenic stem cell of Claim 174, wherein the transgenic stem cell is a pluripotent, multipotent, bipotent, or monopotent stem cell.

176.(Reiterated) The transgenic stem cell of Claim 174, wherein said stem cell is a spermatogonial, hematopoietic, embryonic, osteogenic, granulopoietic, sympathoadrenal, mesenchymal, epidermal, neuronal, neural crest, O-2A progenitor, brain, kidney, pancreatic, liver or cardiac stem cell.

177.(Reiterated) The transgenic stem cell of Claim 174, grown in vitro.

178.(Reiterated) The transgenic stem cell of Claim 177, grown in the presence of an inhibitor of DNA methylation.

179.(Reiterated) A transgenic non-human mammal comprising the transgenic stem cell of Claim 174.

180.(Reiterated) The transgenic non-human mammal of Claim 179, wherein said non-human mammal is a non-human primate, a mouse, a rat, a rabbit, a gerbil, a hamster, a canine, a feline, an ovine, a bovine, a swine, a pachyderm, an equine, or a marine mammal.

181.(Amended) A method of obtaining a transgenic stem cell of a mouse, comprising:

injecting into a gonad of a male mouse a transfection mixture comprising at least one transfecting agent that comprises a lipid transfecting agent, a liposome, an adenovirus-enhanced-transferrin-polylysine-DNA complex, or a viral vector, the viral vector being selected from the group consisting of retroviral vectors, mumps vectors, and adenoviral vectors, and at least one polynucleotide comprising a transcriptional unit of a human cyclin A1 promoter sequence operatively linked to a DNA encoding a fluorescent or light-emitting protein, wherein said gonad contains a male germ cell of the mouse, and wherein said germ cell is selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa;

causing said polynucleotide to be taken up by, and released into, said germ cell; and

incorporating said polynucleotide into the genome of said germ cell, whereby a transgenic stem cell is obtained, the transgenic stem cell being a transgenic germ cell that expresses said fluorescent or light-emitting protein, by the detection of which the transgenic germ cell can be isolated or selected from a population of non-transgenic germ cells.

182.(Amended) The method of Claim 181, further comprising, after incorporating said polynucleotide into the genome of said germ cell, breeding said male mouse with a female mouse to obtain a transgenic progeny expressing said fluorescent or light-emitting protein in at least one of its stem cells, said stem cell being a transgenic stem cell selected from the group consisting of germ cells and somatic stem cells.

183.(Reiterated) The method of Claim 182, wherein breeding is by in vitro or in vivo fertilization of an ovum of said female mouse.

184.(Amended) The method of Claim 181, wherein said cyclin A1 promoter sequence comprises SEQ ID NO:2, or an operative fragment of SEQ ID NO:2, or an operative derivative of any of these, wherein the derivative does not comprise an operative translational start site at nucleotide positions 1425-1427 of SEQ ID NO:2, and wherein the derivative comprises a Sp1 binding site between nucleotide positions 1188-1262 of SEQ ID NO:2.

185.(Reiterated) The method of Claim 181, wherein said polynucleotide further comprises at least one insulator element flanking said transcriptional unit, whereby methylation in vivo of said promoter sequence is substantially prevented.

186.(Reiterated) The method of Claim 185, wherein at least one of said insulator element(s) is a chicken β-globin insulator element.

187.(Reiterated) The method of Claim 181, wherein said fluorescent or light-emitting protein is a green fluorescent protein, yellow fluorescent protein, blue fluorescent protein, phycobiliprotein, luciferase or apoaequorin.

188.(Amended) The method of Claim 181, wherein the transgenic germ cell develops into a transgenic male gamete after said polynucleotide is incorporated into the genome of said germ cell.

189.(Amended) The method of Claim 182, further comprising growing the transgenic stem cell of said progeny in vitro.

190.(Amended) The method of Claim 189, wherein the transgenic stem cell of said progeny is grown in the presence of an inhibitor of DNA methylation.

191.(Amended) A transgenic stem cell obtained by the method of Claim 182.

192.(Amended) The transgenic stem cell of Claim 191, wherein the transgenic stem cell is a transgenic male germ cell.

193.(Amended) A transgenic mouse comprising the transgenic stem cell of Claim 191.

194.(Amended) Semen of a male mouse comprising the transgenic male gamete obtained by the method of Claim 188.

195.(Amended) A method of producing a transgenic murine line having native germ cells, comprising

breeding the transgenic mouse of Claim 193 with a mouse of the opposite sex; and selecting progeny for stem cell-specific expression of a xenogeneic fluorescent or light-emitting protein.